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What influences the quality of educational encounters between trainer and trainee in vocational training for general practice?

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SUMMARY This study of educational encounters between a trainer and a trainee in vocational training for general practice investigates the quality of the encounter. The study focuses on the relation between the quality of the encounter and elements such as presence of feedback, duration, use of media, etc. A quality measure based on the Gagné and Briggs model for the design of instructional events was developed. The quality score was correlated with other elements of the encounter as reported in a log diary completed by trainees. In the log diary 45 trainees registered 314 encounters. Quality predictors included duration of the encounter, the number of media (files of patients, professional guidelines) used, the number of follow-up activities and feedback by the trainer on the performance of the trainee. Several elements were identified as contributing to the educational quality of the encounter, such as presence of media, follow-up activities and positive feedback. The trainer can easily control these elements.

Introduction

Professions that require a high degree of skill often rely on apprenticeship learning, i.e. learning during a training period in which a trainee works alongside an experienced practitioner. The vocational training for general practice in The Netherlands is based on this 'apprenticeship learning model'. In the first and third year of their training, GP trainees work alongside an experienced general practitioner (GP) for four days a week. One day a week they attend a day-release course at the university vocational training department. GP trainer and trainee are required to organize educational encounters on a regular basis, preferably every day (Curriculum Construction Committee, 1986).

From an educational perspective the encounter between trainer and trainee is considered to be a crucial learning moment, in which the trainer can identify and address the personal learning needs of the trainee (Irby, 1995). Harden & Crosby (2000) and also Coles (1994) emphasize the changing roles of the medical teacher: not the traditional 'do what I tell you' teacher but a facilitator with a learner-centred approach. In a review article about clinical supervision, Kilminster & Jolly (2000) address other key features in good teaching. Among these features is the ability of a teacher to plan, to prepare and to run a teaching session well. A few studies investigated the quality of the teaching skills of the GP trainers in one-on-one tutorials (Slort *et al.*, 1997, Duggan *et al.*, 1999). However, we hardly know which

elements contribute to the success of an encounter. This raises the question as to whether the quality of these encounters relates to objective and controllable elements of the encounter. Identification of these elements would be important for the training of the GP trainers. They could improve the quality of the educational encounter by focusing on elements correlating positively with this quality.

Method

Instruments

To identify which elements characterize the quality of the educational encounter in vocational training a log diary with an item list was developed consisting of 18 items (Table 1). The items on the list of the log diary were based on the literature. Elements that constitute an instructional *setting* are described in a model proposed by van Gelder (1981) (item 6, 7, 8, 12, 13, 14 and 18). Item no. 5 and its subitems is based on seven *types* of encounters described by van Geldorp *et al.* (1993). The other items are crucial elements derived from the GP-training handbook of Hall *et al.* (1999).

To be able to assess the *quality* of an encounter, a measure of instructional quality was developed, derived from the 'instructional events' model by Gagné *et al.* (1992). This model prescribes the generic instructional activities of a teacher. Item no. 11 in the log diary represents this 'instructional events model, adapted for the GP-training encounter in which both trainer and trainee contribute to the instructional event. The model was adapted by translating instructions such as 'the teacher informs the learner of the objective of the instruction' into 'the encounter had a clear objective'. The subitems of the quality measure were formatted as five-point scales with the ends defined as 'I do not agree/I agree' coded as 0 and 4 respectively. The sum of the scores constitutes the quality index, which has a theoretical range from 0 to 36. A high score represents high quality. Table 2 presents the elements of the adapted model.

The log diary was completed by first-year trainees.

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Table 1. log diary item list

(1)	Date, time
(2)	Breakdown of duration in relation to content: Patients, personal affairs, practical matters, theme
(3)	Location: In the practice, in the car, elsewhere
(4a)	Whether an appointment was made: Yes, no
(4b)	Who took the initiative: The trainee, both, the trainer
(5)	Type of encounter: Daily report, consultation of trainer by trainee, theme tutorial, observation by trainer, progress discussion, personal affairs, other
(6)	Medical content by ICPC category (Lamberts & Wood, 1978):No medical content, 16 ICPC categories, general (not specified), other
(7)	Aspects of medical content: No medical content, diagnostics, policy, prevention, age groups, urgent care, patient with chronic com- plaints, epidemiology, other
(8)	Media (files, journals etc.): Patient files, books, journals, professional guidelines (Rutten & Thomas, 1993), models, video, notes from lectures, none, other
(9)	Angle of encounter: Evidence based knowledge, experience-based knowl- edge
(10)	Type of content of encounter: Knowledge, skills, attitude
(11)	See Table 2
(12)	Type of feedback: What was done correctly, done incorrectly, how to act in the future, no feedback, not applicable
(13)	Trainee activities during encounter: Listening, discussing, looking up a topic, working together on a problem, role-playing, other
(14)	Relation of encounter to day-release course: Present, absent
(15)	Interruptions of encounter: No, yes, stating reason and number of interruptions
(16)	Satisfaction of trainee: <ul style="list-style-type: none"> • Perceived learning yield • Pleasantness of the encounter • Relevance • Being motivated by the encounter • Feeling by trainee that problems were addressed • Appropriate content level • Appropriate duration • Amount of input from the trainee required • Experiencing the encounter as a safe situation
(17)	Similarity of encounter to earlier ones: Yes, no, no because
(18)	Follow-up activities by the trainee: None, self-study, questions for the day-release course, appointment for an encounter, other

Table 2. Subitems of item 11, the instructional quality
measure of the educational encounter.

- | | |
|-----|---|
| (1) | The encounter related to earlier encounters |
| (2) | The encounter was about things I wanted to know |
| (3) | The encounter had a clear objective |
| (4) | The encounter had a clear structure |
| (5) | The encounter contained clarifying examples. |
| (6) | The encounter built on content discussed earlier |
| (7) | During the encounter, it was possible to practise skills,
to discuss problems or ideas, etc. |
| (8) | The encounter contained questions to enhance reflection |
| (9) | Assessment was part of the encounter |

Procedure

As a part of a national evaluation study of the Dutch three-year vocational training curriculum (Tan & Kramer, 1999), 20 course organizers of the September 1995 cohort from seven university departments for vocational training for general practice in The Netherlands were asked whether they would ask their groups of trainees to log their educational encounters with their trainers. Seven of the 20 course organizers agreed to ask their (in total 84) trainees to participate. Each trainee received a booklet with 20 copies of the item list and was instructed to complete a copy of the list when an encounter (a) took more than five minutes and (b) was aimed at learning by the trainee. Trainees had to register all encounters that took place within two consecutive weeks in June and July 1996. The reliability of registrations by trainees in general practice has been subject of research by Van der Vleuten and colleagues. They concluded that, for the registration of the duration (with a minimum accuracy of five minutes) of educational encounters, a registration period of one day in a sample size of 50 trainees already leads to an acceptable reliability of registration (Van der Vleuten *et al.*, 1994). Accordingly, the registration period and sample size of trainees in our study should be sufficient for the results of our study to reach an acceptable reliability.

Analysis

To assess the instructional quality of the encounters the quality index of all encounters was computed by adding the scores of the elements of item 11. Then the correlation (Spearman's rho) of the quality score with the other items was computed.

Result

Of the 84 trainees, 45 (53.6%) returned their log diaries in which they had registered a total of 323 encounters. On average, each trainee completed 7.2 item lists (*SD* = 2.9). On average the trainees completed one list every 2.5 days.

Instructional quality of the encounters

The index of instructional quality could be computed for 314 encounters. The observed quality scores ranges from 8 to 36 with a mean score of 23.29 (*SD* = 5.29). The quality items constitute a scale with a Cronbach's alpha of 0.75.

Elements of the log diary correlating with the instructional quality

Table 3 lists seven clusters of elements with significant correlations (Spearman’s rho, $p < 0.01$) between the quality score and other elements from the encounter. These correlations identify the elements of the encounter that influence its quality. The higher the correlation, the more this element contributes to a higher quality of the encounter.

In the cluster ‘use of media’, the *number* of instructional media used contributes clearly to a higher instructional quality. Two types of instructional media, i.e. patient files and professional guidelines, have relatively high correlations.¹² In the cluster ‘Instructional context’ the number of follow-up activities, such as self-study (self-tuition), also shows a positive correlation. When the trainee has an active role in the encounter, for example in a discussion, this also goes with a better quality score. The total time of the encounter shows a similar correlation and from our breakdown of the time spent in an encounter only one, i.e. the time used discussing cases, is significant. In the ‘feedback cluster’ feedback on what was done correctly leads to a higher quality score. Other types of feedback have a lower correlation.

The content of the encounter also contributes to its quality: when medical content is discussed the quality score is higher. Two items refer to the organization of the encounter. The first is whether trainer and trainee have made an appointment or whether the encounter happened coincidentally. Planned encounters contribute to a higher quality score. The second is where the encounter was held: when held at the practice a significant positive correlation is found. Encounters where the trainer observes the trainee and where the findings are discussed is also positively correlated with the quality score.

Box 1. Elements with a positive correlation with the quality of the encounter:

- preparation, i.e. making an appointment (*protected time*) and collecting medical journals, books, files of patients, etc.;
- follow-up activities, i.e. encounter having follow-up activities;
- positive reinforcement, i.e. giving trainee feedback on what was done correctly;
- direct observation, i.e. trainer observing trainee and discussing observations afterwards with trainee;
- presence of medical content of the encounter.

Discussion

In this study the quality of encounters was explored from an instructional viewpoint by computing a quality index based on the model of Gagné *et al.* They stated that “the techniques we describe are derived from the knowledge of varieties of learning outcomes . . . and represent direct applications of this knowledge” (Gagné *et al.*, 1992, p. 96)

The items (except item 11, the quality item) in our log diary were practical and put together from different practical sources. The positive correlations emphasize the importance of many of these practical suggestions in the light of the (according to the model of Gagné *et al.*) theoretically grounded quality of educational encounter. The importance of the presence of feedback and the planning of the encounters are congruent with the findings of Irby (1995) and Kilminster & Jolly (2000). Moreover, the suggestions for improvement of the quality of the educational encounter provide a practical guide that supplements the already established importance of these teaching sessions.

Table 3. Correlation between the quality score and elements of encounters.

Cluster	Element	Spearman’s rho ($p < 0.01$)
Use of media	Number of media used	0.342
	Presence of media	0.313
	Patient files present	0.252
	Professional guidelines present	0.223
Instructional context	Number of follow-up activities	0.333
	Presence of follow-up activities	0.297
	Self-study as activity	0.271
	Reporting back in day-release course	0.191
	Active participation by trainee	0.146
Time spent on encounter	Total time of encounter	0.220
	Duration of discussion of contacts with patients	0.177
Feedback	Presence of feedback	0.200
	Feedback on what was done correctly	0.209
	Feedback on what was done incorrectly	0.154
	Feedback on how to act in the future	0.153
	Number of types of feedback	0.216
Content	Medical content	0.199
	Aspect of medical content (see Table 1, no. 7)	0.182
Organization	Appointment made	0.197
	Location at the practice	0.196
Type of encounter	Observation of trainee by trainer with discussion afterwards	0.155

In this study we included only first-year trainees. This could have introduced a content bias in their scores, e.g. they are more interested in medical content than in practice management. It is important to have a 'teacher's agenda' that comprises more than medical content, but most trainees will include these subjects in their 'learner's agenda' in due time.

In our study we had a relatively high non-response rate. However, we have no reason to believe that this introduced a bias in the study, as all trainees *within one group of trainees* were approached in the same way, ensuring a selection-free sample of encounters. The number of encounters and an analysis restricted to encounters as unit of observation in our opinion also minimizes the risk of any bias caused by selection. Whether the fact that the trainee who logged the aspects of the encounter also logged the quality of that encounter has any influence on these results remains unanswered, but highly probable. Ideally, an independent quality indicator should be explored in follow-up research in this area.

Conclusion

The results of this registration should have consequences for the training of trainers. The elements identified can be controlled by the trainer (and by the trainee). To foster the instructional quality of educational encounters, training of trainers and the (formative) assessment of trainers should focus on these elements.

Practice points

- Several easily controllable elements of the educational encounter between trainer and trainee in vocational training for general practice can improve its quality.
- The quality is improved by better preparation, by more follow-up activities, and by more feedback about what was done well.

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